

Public Works Academy of Seminole County
EQUIPMENT-OPERATION AND MAINTENANCE [Physical Plant]
COURSE MODULES (D)

➤ **Basic Pump Operation (4 hours) /**

Performance Objectives:

- Identify the definitions associated with pumps
- Identify pump types
- Identify pump sizes
- Identify functions of intake and discharge
- Problems/Troubleshooting
- Knowledge of safety procedures

➤ **Generator Operation (4 hours) /**

Performance Objectives:

- Definitions
- Types of generators
- Functions
- Problems/troubleshooting
- Knowledge of safety procedures

➤ **Basic Electrical Systems (4 hours) / PDV 0115**

Course Description: This course will discuss the fundamentals of electrical theory; definition of voltage, current, resistance, & power and application of Ohm's Law and power formula; use of meters; series & parallel circuits; power systems; and fundamentals of Motor Control – to include troubleshooting.

Performance Objectives:

- Relate electricity to the nature of matter.
- Identify sources of electricity.
- Define voltage, current, resistance, power and energy.
- Apply Ohm's law and power formulas.
- Read and interpret color codes and symbols to identify electrical components and values.
- Measure properties of a circuit using volt-ohm meter (VOM) and digital volt-ohm meter (DVM) meters and oscilloscopes.

Outline:

- I. Fundamentals of Atomic Theory
- II. Sources of Electricity - Generators, Batteries, Magnetism
- III. Circuits - Open, Closed, Short
- IV. Voltage, current, resistance relations. (Ohm's Law)
- V. Power Calculations - (Power Formula)
- VI. Series, Parallel circuit calculations
- VII. Electrical Systems - Single phase, three-phase - Delta, Wye conns.
- VIII. Fundamentals of Motor Control
- IX. Troubleshooting

➤ **H.V.A.C. (4 hours) /**

Performance Objectives:

- Define terms and cycle in refrigeration
- Diagram refrigeration cycles
- Define terms of electricity
- Develop electrical schematics
- Connect electrical components used in the HVACR industry
- Use Brazing equipment to construct piping, tubing, and fittings
- Correctly use HVACR tools, instruments and accessories

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- Practice safety in the working place.

➤ **Welding Techniques (4 hours) /**

Performance Objectives:

- Perform safely using shop power and hand tools
- Demonstrate ability to identify metals.
- Cut metals using all processes available.
- Oxy-acetylene: operate the equipment safely and cut, heat, and weld with skill.
- Arc welding of all positions, all joints and all rods up to structural specifications.
- Select proper rods, proper polarity and amperage.